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U-Y-03, 2011 A

Technology-Education Linkage Through Disaster Reduction Hyperbase

-Ideas from GCOE-ARS Classroom 2011-

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Preface

The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) states that the Global COE (GCOE) Program aims to enhance the educational and research capabilities of graduate schools in Japan and to foster world-leading and creative personnel in high-standards research centers focusing on establishing world-class educational and research bases, in order to develop internationally competitive universities. Since 2009, under this GCOE Program, Kyoto University has been implementing “Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions” (GCOE-ARS), which was proposed by two research institutes (Disaster Prevention Research Institute and Research Institute for Sustainable Humanosphere) and five graduate schools (Science, Engineering, Agriculture, Informatics and Global Environmental Studies).

The GCOE-ARS project focuses on how human beings and human society can adapt to global-scale changes, including climate change that incurs extreme weather and changes in water cycle on the Earth, population increase, urbanization, desertification, etc. It especially emphasizes scientific explanation and prediction of weather and hydrological disasters, and focuses on the social adaptation to these events.

The GCOE-ARS curriculum includes “interdisciplinary seminar” subjects, one of which is “Self-Organized/Voluntary Seminar for Sustainability/Survivability Science (U-Y-03)”. This interdisciplinary seminar involves professors and students from different disciplines. In the second semester of 2011, we organized a seminar (U-Y-03-2011A) for Disaster Management Technology Database (DRH Exercise), in which six professors and eight students from six countries (Indonesia, Rep. Korea, Malaysia, Vietnam, USA and Japan) enrolled in GCOE-ARS worked together to produce educational materials, using the Disaster Reduction Hyperbase (DRH) system (http://drh.edm.bosai.go.jp/), which is a well-known knowledge base for management of various kinds of disasters. This booklet is the outcome of this educational endeavor.

March 2012
GCOE-ARS Project Leader
Professor Kaoru Takara

Summary of Classroom

This class is one of the Interdiscilinary seminars of GCOE-ARS (code: U-Y-03).This seminar is provided by two or more instructors from different disciplines to students from different field of study. The latest research trends will be discussed. In order to be certified, students must attend this seminar for at least 1 semester (15 attendance or more).
For the academic year 2011, six educators were involved in this seminar, then entitled "Disaster Management Technology Database (DRH Exercise)", whose objective was the development of disaster education tool using the DRH database. Figure 1 shows the structure of the disaster education tools developed in this classroom. DRH, Disaster Reduction Hyperbase, is a web-based database on disaster risk reduction (DRR). For more details on DRH,please refer to the "About DRH" section on page X-Y. DRH's contents is based from practitioner and some experience and DRH focus is practitioner use it. Thus, DRH's contents have much information about DRR. DRH is used by many practitioners all over the world. Other hand, DRH is not entry point for beginner, low awareness people of DRR. For beginner, low awareness people of DRR, some disaster education tool is effective to growing knowledge, interest, desire and action of DRR. This idea is KIDA tree model (Shaw et al, 2009). Therefore, the objective of this seminar is to try and develop original DRR education tools based on the DRH contents.

Eight students enrolled in this U-Y-03 seminar and it started in October 2011. Figure 2 shows the flow of this seminar as it took place in 2011. And the four steps the students went through to develop their own DRR education tool project. Students idea was freedom and they completed DRR education tool or idea plan about DRH system. Page X-Y is Students out put from this classroom.

Reference: Shaw et al, 2009, 1-2-3 of Disaster Education, International pp176

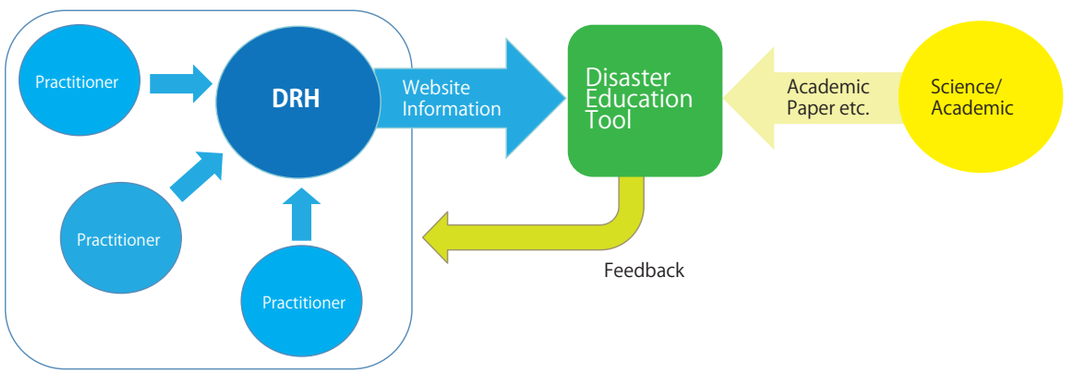


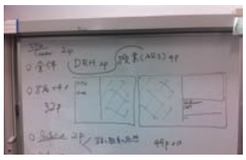
Figure 1. Structure of Disaster Education Tool of this Classroom

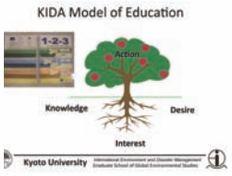
LECTURE

During the lectures, students learnt about disaster risk reduction and disaster education tools, as well as DHR.

TRAINING

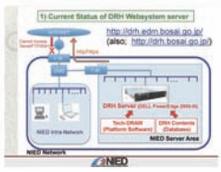
Students accessed the DRH website, and got acquainted with the structure and contents of the database. After accessing and discovering the DRH website, students proposed their own original education tool.





DEVELOPMENT OF TRAINING TOOL

Students developed original education tool using contents from DRH and from other academic sources.



PRESENTATION

Students gave presentations about the original education tools they created, and made corrections based on the educators' comments.

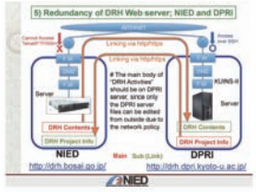


Figure 2. Flow of Classroom U-Y-03 2011

About GCOE-ARS

Global COE Program

Sustainability / Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions

One of the most urgent global issues of our time is to cope with the impacts of the clearly recognized climatic changes, and associated extreme weather and water-related hazards, such as floods and droughts. Even if we were to immediately stop the present increase of emissions of greenhouse effect gases (e.g., carbon dioxide), it would be impossible to curtail the detrimental outcome on our global climate. The lasting effects from our present industrial activities will continue for several decades.

At Kyoto University, in order to confront these crucial problems, we hope to provide more innovative education by creating a new interdisciplinary graduate school education system (Educational Unit) through the GCOE program. This effort will produce young world leaders from many countries, who will have the expertise to deal with the global climate issues in the coming decades. The Educational Unit is composed of five graduate schools (Global Environmental Studies, Science, Engineering, Informatics and Agriculture) and two research institutes: Disaster Prevention Research Institute (DPRI) and Research Institute for Sustainable Humanosphere (RISH), as shown in Figure 1.

The Educational Unit consists of two interdisciplinary courses: Science-Engineering (SE) Joint Course and Humanity (Liberal Arts) and Science-Engineering (H-SE) Joint Course. The Division of Earth and Planetary Sciences (DEPS), Graduate School of Science, will lead the SE course through the Integrated Earth Science Hub. This Hub was created as a result of the 21st Century COE Program “KAGI (Kyoto University Active Geosphere Investigations) 21” in 2003-2007, which was led by DEPS with RISH and DPRI. The Department of Environmental Management (DEM), Graduate School of Global Environmental Studies will lead the H-SE course.

These Joint Courses are created because the global issues cannot be adequately addressed by researchers working in single disciplines. Viable solutions need a sound scientific basis, along with appropriate engineering considerations, as well as

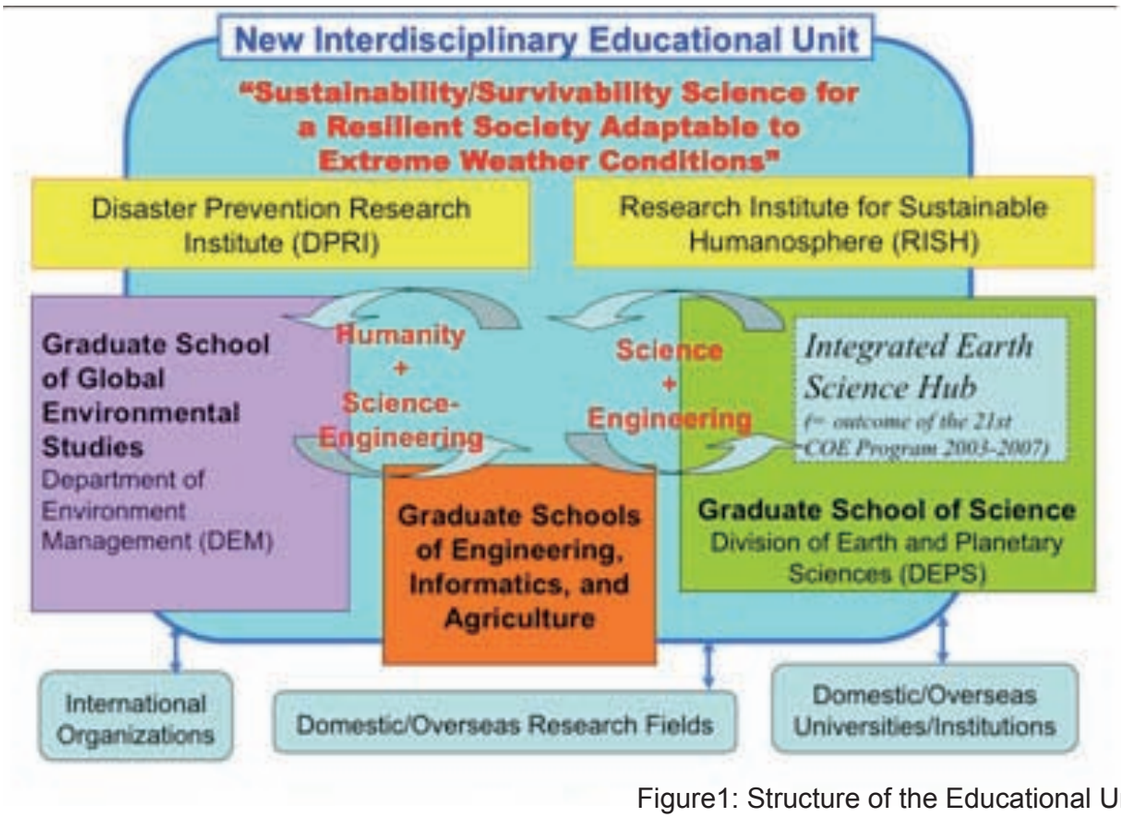


Figure1: Structure of the Educational Unit.

human-based, community-based and socially relevant considerations. It is necessary to train researchers with technical specialties and at the same time develop wider perspectives that cover interdisciplinary aspects. In other words, we need specialists in individual scientific disciplines with the view of "generalists".

Collaborating with international organizations and other universities/ institutions in the world, the program also includes research opportunities for graduate students, post-doctoral fellows and assistant professors. This will provide on-the-job training in domestic/overseas research fields with Kyoto University professors and visiting professors from other institutions who are invited to participate in this GCOE.

Through the education efforts of this GCOE program, Kyoto University can provide the new leaders who will develop the real solutions to mitigate the current and future effects of extreme weather and water disasters in our vulnerable world.

About DRH

What is DRH ?

Disaster Reduction Hyperbase-Asian Application (DRH-Asia) is a web-based database whose objective is to disseminate disaster reduction technology and knowledge. It was designed for potential use by policy makers, community leaders, practitioners and motivated researchers who wish to access appropriate technical know-how that can help them for practical purposes as well as for education and training. DRH provides open and interactive access and easy participation. Fig.1 shows the top page of DRH-Asia.

The DRH-Asia site includes:

***DRH Database (Find technologies)**

***DRH Forum-1 (Propose a technology)**

***DRH Forum-2 (Discuss technologies)**

***DRH Links (DRH partners).**

It also provides:

***DRH Project (DRH Project activities)**

allowing access to all records of the DRH Project (Phase I: April 2005-March 2006, Phase II: July 2006-March 2009 / major sponsor: MEXT).

What are the features of DRR technology and knowledge in DRH?

In-depth discussion was conducted during the DRH Project in order to define a "useful" DRR technology. This led to the concept of 'Implementation Technology' that consists of the following components:

Note: *BM*=Basic Member / *FPM*=Full Profile Member

What you can do with DRH (membership requirement)
DRH Database (Find technologies): +Access DRH Contents (*unlimited*) +Print & download DRH Contents (*unlimited*) +Discuss DRH Contents (*FPM*)
DRH Forum (Propose a technology): +Submit DRH Contents proposals (*FPM*)
DRH Forum (Discuss technologies): +General discussion (*BM, FPM*) +Member discussion on proposed DRH contents (*FPM*)
DRH Links (DRH partners): +Access to relevant initiatives on information platforms for disaster reduction (IPDR) (*unlimited*) +Register your initiative (*FPM*)
DRH Project: +Access to all records of DRH Project – conceptual & practical developments / major documents and presentation materials downloadable (*unlimited*)

Implementation Oriented Technology (IOT): Products from modern research and development that are practiced under clear implementation strategies

Process Technology (PT):
Know-how for implementation and practice, capacity building and social development for knowledge ownership

Transferable Indigenous Knowledge (TIK): Traditional art of disaster reduction that is indigenous to specific region(s) but having potential to be applied to other regions and having time-tested reliability

The DRH contents currently registered originate from Algeria, Bangladesh, China, India, Indonesia, Iran, Japan, Nepal, Peru, Philippines, and Sri Lanka. While DRH-Asia is focused on the Asian context, it is open to contributions from other regions in order to enhance cross-regional collaboration.

What you can do on DRH

The following functions are available for you to make the most of DRH (see Fig.2 also).Some are with unlimited access, while some ask for membership registration. All instructions are found on the DRH site.

(1) Access, print and download of DRR (disaster risk reduction) technology and knowledge registered in the DRH Database as DRH Contents.

(2) Contribute your DRR technology and knowledge by submitting a proposal through DRH Forum-1, having it discussed in DRH-Forum-2 and registered in theDRH Database.

(3) Access relevant DRR information initiatives worldwide through the DRH Links. You may register your initiative via web manipulation.

(4) Throughout the construction period of DRH-Asia, many conceptual developments were achieved that can be valuable research information. All those documents are available at DRH Project.

(5) DRH-Asia has been designed as an English language-based site. Google translator has been incorporated and allow users to translate the pages into their own language.(6) The software Tech-DRAW, used as the base software of DRH-Asia, is available to those interested in their regional DRH by establishing an agreement with NIED (National Research Institute for Earth Science and Disaster Prevention), Japan.

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